Serial ATA PCI RAID Quick Installation Guide

Introducing the *Serial ATA PCI RAID*

The *Serial ATA PCI RAID* is an ultra high-speed two channel Serial ATA controller board for use in Pentium-class computers. It achieves burst data transfer rates up to 150MB/s (1.5Gb/s) and supports various brands of hard disk drives with capacities greater that 137GB.

Features and Benefits

- Increased performance and security with Serial ATA RAID
- Supports 32-bit wide PCI bus at 66MHz and data transfer rates up to 1.5Gb/s (150MB/s)
- Supports RAID 0 (stripe) for performance and RAID 1 (mirror) for data reliability
- Compliant with Serial ATA 1.0 and PCI 2.2 specifications
- Coexists with on-board controller
- Features independent 256-byte FIFOs per channel for host reads and writes
- Feature Watch Dog timer for fault resiliency and flash memory for future BIOS updates
- Breaks the 137GB barrier! Works with various brands of large capacity Serial ATA hard disks

System Requirements

- Pentium or equivalent PC with an available PCI slot
- Windows 98SE/ME/2000/XP/Server 2003

Package Contents

- *Serial ATA PCI RAID* and (2) SATA data cables
- Dual Connector Serial ATA power cable and "Y" split power cable
- Driver software and user's manual

Layout

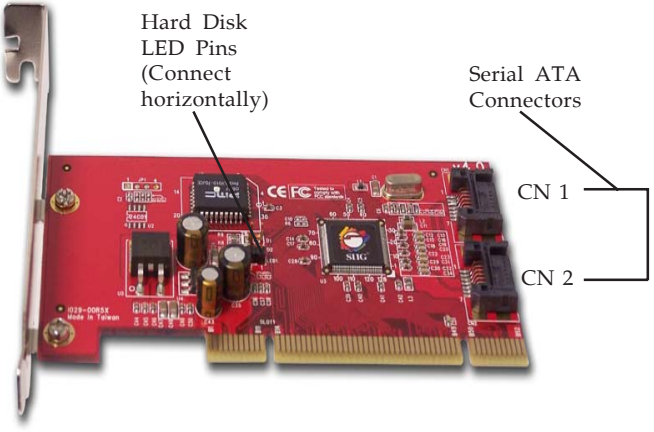

Figure 1:: Serial ATA PCI RAID layout

Hardware Installation

General instructions for installing the card are provided below. Since the design of computer cases and motherboards vary, refer to your computer's reference manual for further information, if needed.

Static Electricity Discharge may permanently damage your system. Discharge any static electricity build up in your body by touching your computer's case for a few seconds. Avoid any contact with internal parts and handle cards only by their external edges.

1. Turn OFF the power to your computer and any other connected peripheral devices.
2. Unplug the power cord from the back of the computer.
3. Remove your computer's cover.
4. Remove the slot bracket from an available PCI slot.
5. To install the card, carefully align the card's bus connector with the selected PCI slot on the motherboard. Push the board down firmly, but gently, until it is well seated.
6. Replace the slot bracket's holding screw to secure the card.
7. Now go to **Device Connection** to connect your Serial ATA hard disk drives.

Device Connection

The *Serial ATA PCI RAID* is a two channel Serial ATA controller that supports up to two Serial ATA hard disk drives. It is recommended to use identical hard drives for all RAID configurations, however, it's possible to combine hard drives of different sizes and makes.

1. Install your hard disk drive(s) in chassis.

2. Connect the Serial ATA hard disk drive to the system power supply using the included *Serial ATA power cable*.
3. Connect one end of the *Serial ATA cable* to the hard disk drive.

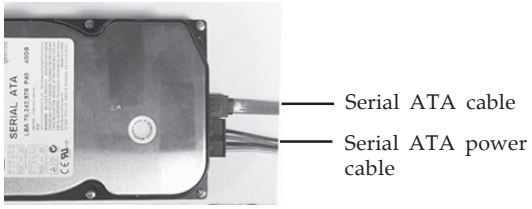

Figure 2. Hard disk drive connections

4. Attach the other end of the *Serial ATA cable* to the Serial ATA connector on the *Serial ATA PCI RAID*.

Figure 3. Connecting the Serial ATA cable

5. Follow the same instructions to connect a second hard drive. Device connection is now complete.
6. Replace the computer cover and reconnect the power cord. Go to **RAID Arrays** to configure the RAID BIOS.

RAID Arrays

RAID Arrays are setup in the *Serial ATA PCI RAID's* BIOS. Find your RAID set from the table of contents. Follow the steps in the order in which they appear.

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RAID 0 (Striping)

This RAID array to be used on **New/Blank** hard drives. Striping will destroy existing data on the hard drive.

> **Note:** It is recommended to use **Auto configuration**. For Advanced users or software applications that require a custom chunk size, **Manual configuration** is offered.

For Auto Configuration

The default chunk size is **64k** when selecting **Auto configuration**.

1. As the BIOS boots press **Ctrl+S** or **F4** when prompted to enter the **RAID** BIOS.
2. At the next screen select **Create RAID Set**, then press **Enter**.
3. Select **Striped**, then press **Enter**.
4. Select **Auto configuration**, then press **Enter**.
5. When asked **Are You Sure (Y/N)?**, press **Y** to accept.

6. Press **Ctrl+E** to exit the BIOS.
7. When asked **Are you sure to exit (Y/N)?**, press **Y** to exit and reboot.

For Manual Configuration

1. As the BIOS boots press **Ctrl+S** or **F4** when prompted to enter the **RAID** BIOS.
2. At the next screen select **Create RAID Set**, then press **Enter**.
3. Select **Striped**, then press **Enter**.
4. Select **Manual configuration**, then press **Enter**.
5. Select the **first drive**, press **Enter**.
6. Select the **second drive**, press **Enter**.
7. Select the chunk size, then press **Enter**.
8. When asked **Are You Sure (Y/N)?**, press **Y** to accept.
9. Press **Ctrl+E** to exit the BIOS.
10. When asked **Are you sure to exit (Y/N)?**, press **Y** to exit and reboot.

RAID 1 (Mirror)

For New/Blank Hard Drives

1. As the BIOS boots press **Ctrl+S** or **F4** when prompted to enter the **RAID** BIOS.
2. At the next screen select **Create RAID Set**, then press **Enter**.
3. At the next screen select **Mirrored** then press **Enter**.
4. Select **Auto configuration**, then press **Enter**.
5. When asked **Are You Sure (Y/N)?**, press **Y** to accept.
6. Press **Ctrl+E** to exit the BIOS.
7. When asked **Are you sure to exit (Y/N)?**, press **Y** to exit and reboot.

For Existing Hard Drives with Data

1. As the BIOS boots press **Ctrl+S** or **F4** when prompted to enter the **RAID** BIOS.
2. At the next screen select **Create RAID Set**, then press **Enter**.
3. At the next screen select **Mirrored** then press **Enter**.
4. Select **Manual configuration**, then press **Enter**.
5. Select the Source drive, press **Enter**.
6. Select the Target drive, press **Enter**.
7. At the **Disk Copy** window select **Yes**, then press **Enter**.
8. Select **Offline copy**, then press **Enter**.
9. When asked **Are You Sure (Y/N)?**, press **Y** to begin disk copy.

> **Note:** Disk copy time is dependant on the size of the mirrored set. Do not interrupt disk copy once started.

10. After disk copy completes, press **Ctrl+E** to exit the BIOS.
11. When asked **Are you sure to exit (Y/N)?**, press **Y** to exit and reboot.

Rebuilding a Failed Mirror Set

When a failure to one member occurs, you will be notified either by the RAID BIOS during boot or by the SATA Raid GUI while in Windows. The steps below will guide you in rebuilding a failed mirror set.

1. Shutdown Windows, replace the failed hard drive, then restart the system.
2. During boot press **Ctrl+S** or **F4** to enter the **RAID** BIOS.

3. Select **Rebuild Mirror set** then press **Enter**.
4. Select **Offline rebuild** then press **Enter**.
5. When asked **Are You Sure (Y/N)?**, press **Y** to confirm.
6. The mirror will start to rebuild. When rebuilding finishes, press **Ctrl+E** to exit. (Rebuilding can take 30-90 minutes depending on the size of the mirror).
7. When asked **Are you sure to exit (Y/N)?**, press **Y** to exit and reboot.

Deleting RAID Arrays

1. As the BIOS boots press **Ctrl+S** or **F4** when prompted to enter the **RAID** BIOS.
2. Select **Delete RAID Set**, then press **Enter**.
3. Press **Enter**.
4. When asked **Are You Sure (Y/N)?**, press **Y** to confirm.
5. The RAID set is now deleted.

Resolving Conflicts

When a RAID set is created, the metadata written to the disk includes drive connection information. If, after a disk failure, the replacement disk was previously part of a RAID set (or used in another system), it may have conflicting metadata. If so, this will prohibit the RAID set from being either created or rebuilt, in order for the RAID set to function properly, this old metadata must be first overwritten with the new metadata. To resolve this, from the main BIOS window select **Resolve Conflicts**, then press **Enter**, the correct metadata, including the correct drive connection information, will be written to the replacement disk.

Low Level Format

Low Level Format is built into the RAID BIOS to make it more convenient to erase the entire contents of a hard disk drive, including data, drive and partition information. The Low Level Format utility works on single hard drives only, before the RAID set is configured.

Driver Installation

This section provides information on how to install the *Serial ATA PCI RAID* drivers.

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Windows 98SE

For A New Installation

1. Setup the RAID array prior to Windows installation.
2. Follow Microsoft's Windows 98SE installation procedure.
3. Once Windows has installed, right click **My Computer**, click **Properties**, click **Device Manager.**
4. Double click **PCI RAID controller** listed under **Other Devices**.
5. Select **Driver** tab, then click **Update Driver** button.

6. Insert the driver CD, then click **Next**.
7. Select **Search for the better driver ...** and click **Next**.
8. Check **CD-ROM drive,** uncheck the other boxes**,** then click **Next**. Click **Next** again, then **Finish**.
9. Remove the driver CD, then restart Windows to complete the installation.

When Windows resumes, go to **SATARaid GUI** on page 15 and install the RAID monitoring utility.

For An Existing Installation

1. Setup the RAID array prior to driver installation and boot up to Windows.
2. At the **Add New Hardware Wizard**, click **Next** to continue.
3. Select **Search for the best driver for your device** option then click **Next**.
4. Insert the driver CD, check **CD-ROM drive**, uncheck the other check boxes, then click **Next**.
5. Click **Next,** then **Finish**.
6. Remove the driver CD and restart Windows to complete installation.

When Windows resumes, go to **SATARaid GUI** on page 15 and install the RAID monitoring utility.

Windows ME

For A New Installation

1. Setup the RAID array prior to Windows installation.
2. Follow Microsoft's Windows ME installation procedure.
3. Once Windows has installed, right click **My Computer**, click **Properties**, click **Device Manager**.

4. Double click **PCI RAID Controller** listed under **Other Devices**.
5. Select **Driver** tab and click **Update Driver** button.
6. Insert the driver CD, select **Automatic search for a better driver (Recommended)**, then click **Next**.
7. Accept the default entry, then click **OK**.
8. Click **Finish**, remove the driver CD, then restart Windows to complete the installation.

When Windows resumes, go to **SATARaid GUI** on page 15 and install the RAID monitoring utility.

For An Existing Installation

1. Setup the RAID array prior to driver installation and boot up to Windows.
2. At the **Add New Hardware Wizard**, insert the driver CD.
3. Select **Automatic search for a better driver (Recommended)**, then click **Next**.
4. Accept the default entry then click **OK**.
5. Click **Finish**.
6. Remove the driver CD and restart Windows to complete the installation.

When Windows resumes, go to **SATARaid GUI** on page 15 and install the RAID monitoring utility.

To Verify Windows 98SE/ME Installation

1. Right click **My Computer** and click **Properties**. Select **Device Manager** tab.
2. Double click **SCSI controllers**, double click **Silicon Image Sil 3512 SATARaid Controller**. A message *This device is working properly* is displayed in the dialog box, the driver has been correctly installed.

Windows 2000

A new installation of Windows 2000 requires a floppy disk for the driver installation. To make this floppy disk, copy the **contents** of the **Floppy** folder, found on the driver CD, onto a blank floppy disk then follow the directions below.

For A New Installation

1. Setup the RAID array prior to Windows installation.
2. Follow Microsoft's Windows 2000 installation procedure.
3. Restart the computer when prompted by the installation.
4. At the **Windows 2000 Setup** screen, press **F6**.
5. When prompted press **S** to specify the location of the driver.
6. Insert the driver diskette, then press **Enter**.
7. Select **Silicon Image Sil 3x12 SATARaid Controller for Windows NT 4.0 and 2000**, then press **Enter**.
8. Press **Enter** to finish driver installation, then follow the on-screen instructions to complete Windows 2000 installation.

When Windows installation completes, go to **SATARaid GUI** on page 15 and install the RAID monitoring utility.

For An Existing Installation

1. Setup the RAID array prior to driver installation and boot up to Windows.
2. At the **Found New Hardware Wizard**, click **Next**.
3. Select **Search for a suitable driver for my device (recommended),** then click **Next**.
4. Insert the driver CD, check **CD-ROM drives**, uncheck the other check boxes, click **Next**, click **Next** again.

5. Click **Finish**. Remove the driver CD, then restart Windows to complete the installation.

When Windows resumes, go to **SATARaid GUI** on page 15 and install the RAID monitoring utility.

Windows XP/Server 2003

A new installation of Windows XP and Server 2003 requires a floppy disk for the driver installation. To make this floppy disk, copy the **contents** of the **Floppy** folder, found on the driver CD, onto a blank floppy disk then follow the directions below.

1. Setup the RAID array prior to Windows installation.
2. Follow Microsoft's Windows installation procedure.
3. Restart the computer when prompted by Windows' installation.
4. At the **Windows Setup** screen, press **F6** to install the driver.
5. When prompted press **S** to specify the location of the driver.
6. Insert the driver diskette, then press **Enter**.
7. Select **Silicon Image Sil 3x12 SATARaid Controller for Windows XP/Server 2003**, then press **Enter**.
8. Press **Enter** to finish driver installation, then follow the on-screen instructions to complete Windows installation.

When Windows installation completes, go to **SATARaid GUI** on page 15 and install the RAID monitoring utility.

For An Existing Installation

1. Setup the RAID array prior to driver installation and boot up to Windows.
2. At the **Found New Hardware Wizard**,

   XP (w/SP1 or earlier)/Server 2003: continue to step #3

   XP (w/SP2 or later)/Server 2003 (w/SP1 or later): select **No, not at this time**, then click **Next**.
3. Insert the driver CD, select **Install the software automatically (Recommended)**, and click **Next**.
4. Accept the default entry, then click **Next**.
5. Click **Finish**, then restart to complete the installation.

When Windows resumes, go to **SATARaid GUI** on page 15 and install the RAID monitoring utility.

To Verify Windows 2000/XP/Server 2003 Installation

1. Right click **My Computer**, click **Manage**, click **Device Manager**.
2. Double click **SCSI and RAID controllers**, then double click **Silicon Image Sil 3512 SATARaid Controller** to display driver properties. A message *This device is working properly* is displayed in the dialog box, the driver has been correctly installed.

SATARaid GUI

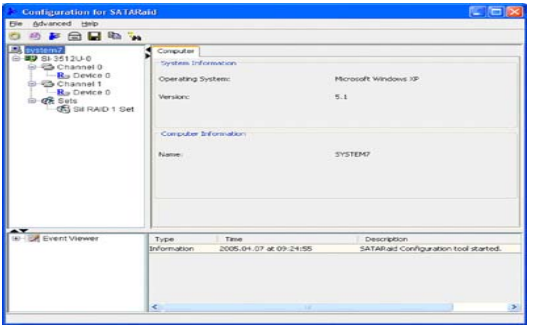
The SATARaid GUI provides the user an easy way to monitor your RAID set. It also offers administrative tools to save, copy, or send via E-mail the current configuration.

Installing SATARaid GUI

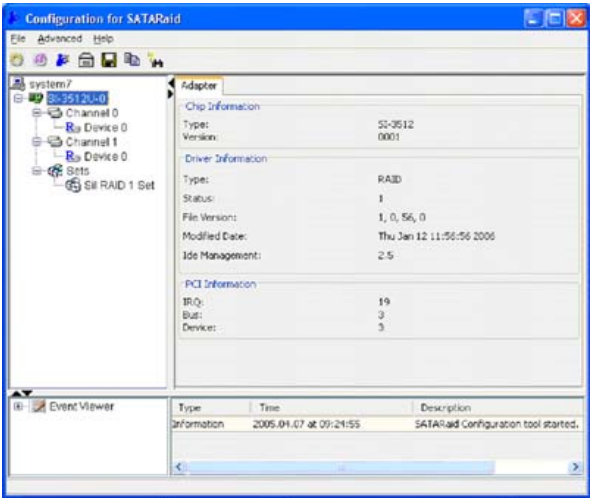
1. Place the driver CD into the CD-ROM drive.
2. At the Windows desktop click **Start**, then **Run**.
3. Type **D:\GUI**, then click **OK**. (Change **D:** to match your CD-ROM drive letter).
4. Install **JavaRaid.exe** first, then install **jre-1_5_0_05.exe** afterwards.
5. Follow the on-screen instructions to complete the installation.

Using SATARaid GUI

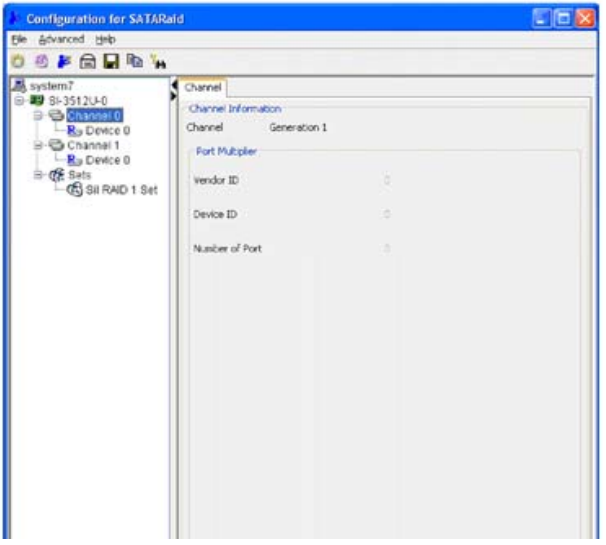
During the installation process, the SATARaid GUI was saved in the Windows Startup folder, a small blue SATARaid logo will appear in the right-hand corner of taskbar. To launch the GUI, simply click on the icon or right click icon and choose **Open**. Upon launching the GUI, the the first window which identifies the computer running SATARaid should appear similar to the following.



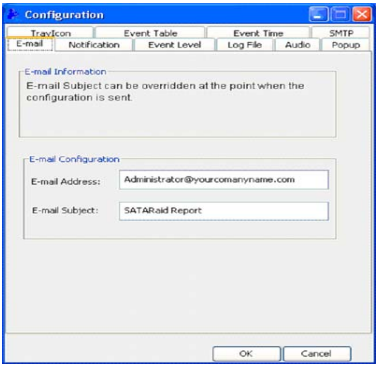
Selecting each different component in the configuration tree provides specific information for that component, such as the chip.

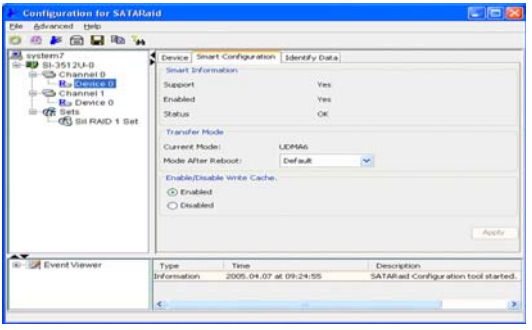


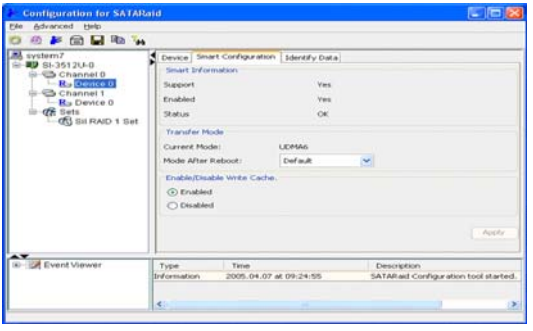
By selecting a specific channel the following information is reported.



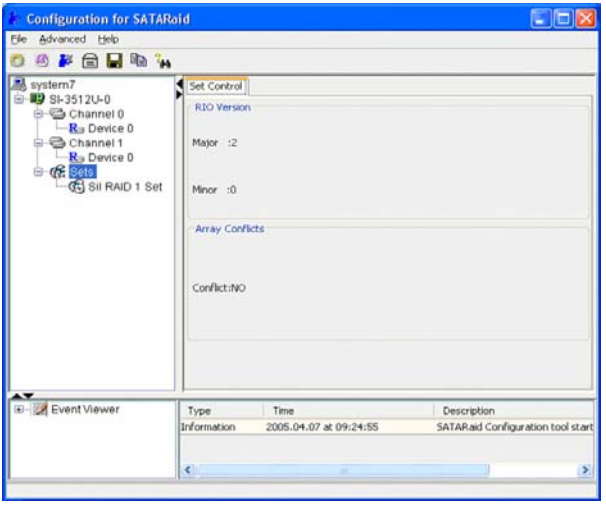
Selecting a specific drive reports all pertinent information to that drive, including Configuration and Disk Identification information.



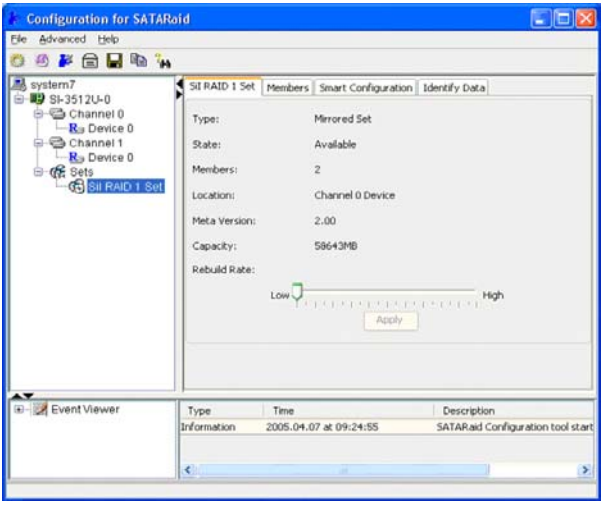




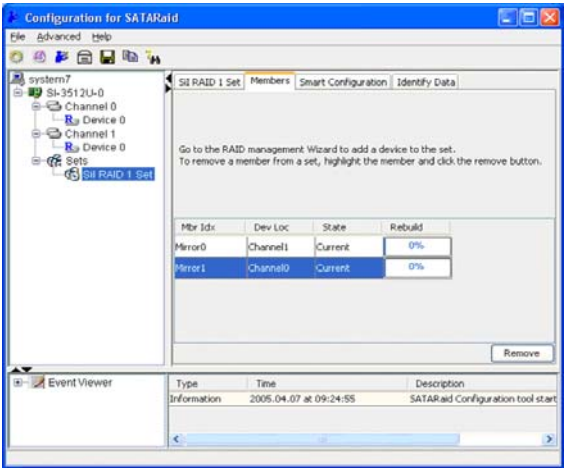
Selecting Sets reports on active RAID sets.



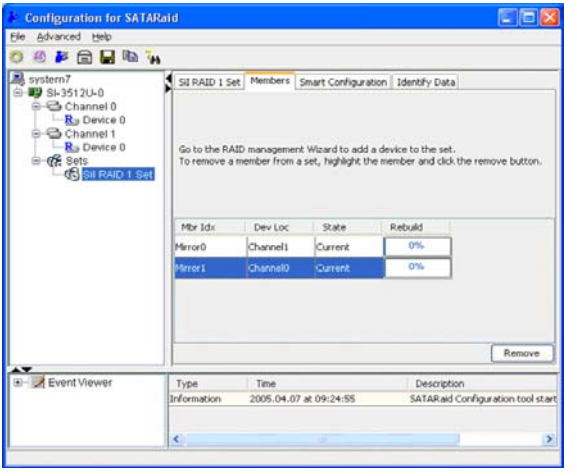
By selecting the specific RAID set, such as Set 1 which is a Mirrored Set, the type of RAID set, the number of members and capacity is reported.



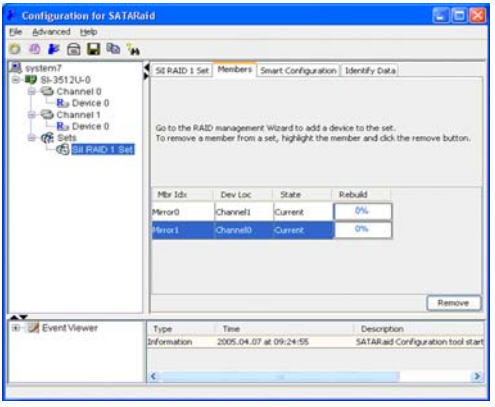
The Members tab reports the device identification (corresponding with the information in the BIOS) and the state of each device.



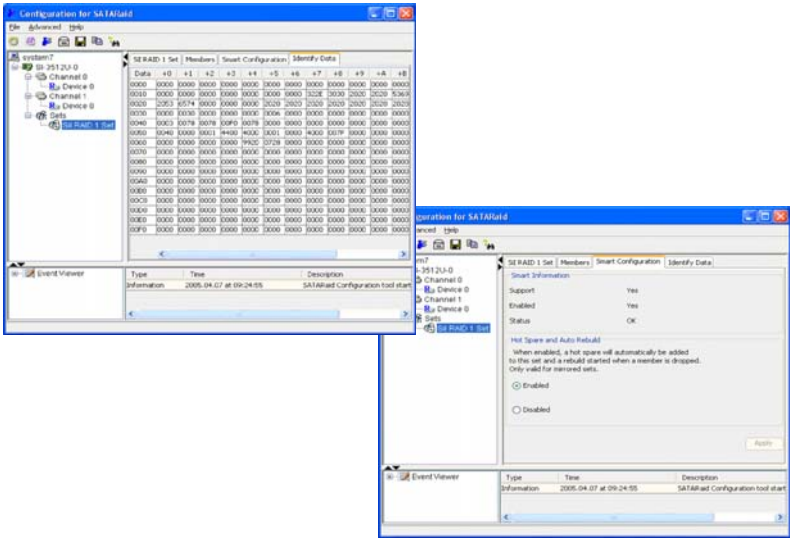
Besides reporting information, the Members tab of a Mirrored Set allows the user to remove a specific drive from that set. However, a drive cannot be removed from a stripe set as this would destroy all the data.



The device identification, along with the state of each device is also reported in the Members tab window. Note that when a Mirror set is first created, the state of the "destination" drive may report as Rebuild for as much as 30-90 minutes depending on the size of the disk.



SMART and Configuration information, as well as Data Identification is again provided for each Set.



Configuration Menu

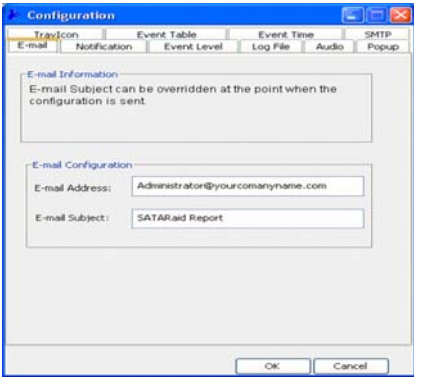
With the SATARaid GUI running, the small SATARaid icon should appear in the bottom right of the computer screen, next to the clock. By right-clicking on the icon and clicking **Configure** the user may configure SATARaid including customizing the settings for SMTP, E-mail, Notification, Event Level, Log File, Audio, and Popup.

SMTP

The SMTP server is the server that is used to send e-mails. Normally, the network administrator knows what this name is. Both the name and domain must be entered.

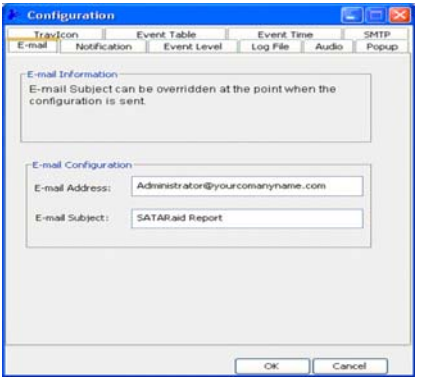
E-Mail

Using the E-mail tab in the Configuration Menu, the user may set the default E-mail address and subject line to where the configuration should be sent. This, however, can be overridden at the time of sending the E-mail.



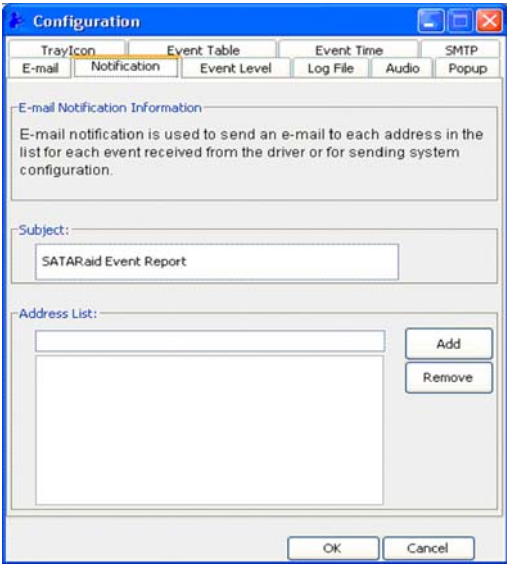
Notification

When different types of events occur, SATARaid may be configured to send notices to assigned individual E-mail addresses. Using the Notification tab, all E-mail addresses desired to receive the notices may be entered.



Event Level

There are different types of E-mail notifications that may be sent which are set with the Event Level tab.



The different levels are:

Disabled - No event logs will be sent

Informational - The following events will be sent:

- Informational
- Warnings
- Errors

Warning - The following events will be sent:

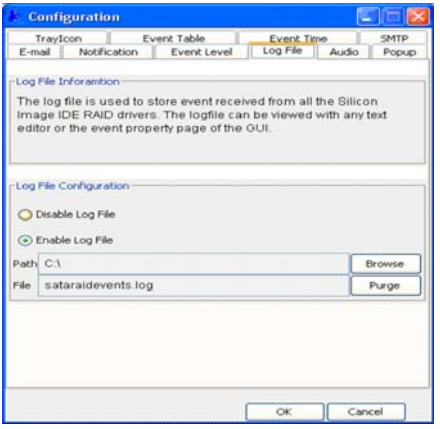
- Warnings
- Errors

Errors - The following events will be sent:

- Errors

Log File

The log file is used to store event information received from all the RAID drivers. The log file is a text file and can be viewed with Notepad or the SATARaid GUI. Use the Log File tab to set where the log file should be stored and the name of the file as well.



Audio

The user may set different audio alerts for the different levels of events.

Popup

The popup window is a visual notification that an event occurred. The popup window can be disabled or set to popup for only certain event levels.

The different levels are:

Disabled - No popup will occur

Informational - The popup window will be displayed for the following events:

- Informational
- Warnings
- Errors

Warning - The popup window will be displayed for the following events:

- Warnings
- Errors

Errors - The popup window will be displayed for the following events:

- Errors

Blank Page

Technical Support and Warranty

QUESTIONS? SIIG's **Online Support** has answers! Simply visit our website at ***www.siig.com*** and click on **Support**. Our online support database is updated daily with new drivers and solutions. Answers to your questions could be just a few clicks away. You can also submit questions online and one of our technical support analysts will promptly respond.

This product comes with a lifetime manufacturer warranty. Please see SIIG website for more warranty details. If you should happen to have any problems with this product, follow the procedures below.

A) If it is within the store's return policy period, please return the product to the store where you purchased from.

B) If your purchase has passed the store's return policy period, please follow these steps to have the product repaired or replaced.

Step 1: Submit your RMA request.

Go to **www.siig.com**, click **Support**, then **RMA** to submit a request to SIIG RMA. If the product is determined to be defective, an RMA number will be issued. SIIG RMA department can also be reached at (510)413-5333.

Step 2: After obtaining an RMA number, ship the product.

- Properly pack the product for shipping. All software, cable(s) and any other accessories that came with the original package must be included.
- Clearly write your RMA number on the top of the returned package. SIIG will refuse to accept any shipping package, and will not be responsible for a product returned without an RMA number posted on the outside of the shipping carton.
- You are responsible for the cost of shipping. Ship the product to the following address:

  SIIG, Inc.
  6078 Stewart Avenue
  Fremont, CA 94538
  RMA#: _____

- SIIG will ship the repaired or replaced product via Ground in the U.S. and International Economy outside of the U.S. at no cost to the customer.

About SIIG, Inc.

Founded in 1985, SIIG, Inc. is a leading computer upgrade manufacturer of I/O connectivity products, including PCI & ISA serial and parallel ports, USB, Serial ATA & UltraATA controllers, FireWire (1394a/b), Networking, Sound Cards, and other accessories. SIIG is the premier one-stop source of upgrades.

SIIG products offer comprehensive user manuals, many user-friendly features, and are backed by an extensive manufacturer warranty. High-quality control standards are evident by the overall ease of installation and compatibility of our products, as well as one of the lowest defective return rates in the industry. SIIG products can be found in computer retail stores, mail order catalogs, and e-commerce sites in the Americas and the UK, as well as through major distributors, system integrators, and VARs.

PRODUCT NAME
Serial ATA PCI RAID

FCC RULES: TESTED TO COMPLY WITH FCC PART 15, CLASS B OPERATING ENVIRONMENT: FOR HOME OR OFFICE USE

FCC COMPLIANCE STATEMENT:

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

THE PARTY RESPONSIBLE FOR PRODUCT COMPLIANCE

SIIG, Inc.
6078 Stewart Ave.
Fremont, CA 94538-3152

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